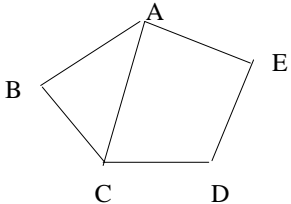
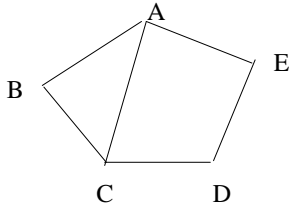
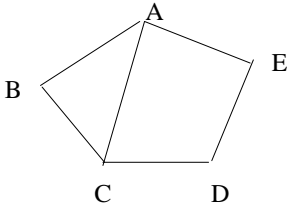


Assessment Schedule – 2009

Mathematics: Use geometric reasoning to solve problems (90153)

Evidence Statement

Question	Achievement	Achievement with Merit	Achievement with Excellence	
ONE (a)	$c = 122^\circ$	Angle SRP = 98 (co-interior angles // sum to 180) $2c + 116 + 82 + 98 = 540$ (interior angles of pentagon add to 540) $2c = 244^\circ$ $c = 122^\circ$		A = 1 of 1(a) or 1(b) M = 1 of 1(a) or 1(b) with reasons E = 1(b) with reasons Question 1 grade = highest of 1(a) or 1(b)
(b)	 <p>Interior angle pentagon = 108° Angle BCA = angle BAC = 36°</p> <p>Reasoning not required.</p>	 <p>Interior angle pentagon = 108° (Interior angle of a 5 sided polygon) BC = BA (regular pentagon) Therefore ABC is an isosceles triangle. Angle BCA = angle BAC = 36° (base angles of an isosceles triangle)</p>	 <p>Interior angle pentagon = 108° (Interior angle of a 5 sided polygon) BC = BA (regular pentagon) Therefore ABC is an isosceles triangle Angle BCA = angle BAC = 36° (base angles of an isosceles triangle) Angle AED + Angle EAC = $108^\circ + 72^\circ$ $= 180^\circ$ ie co-interior angles. Since co-interior angles AED and BAC add up to 180°, AC is parallel to DE so ACDE is a trapezium.</p> <p>Or equivalent.</p>	

TWO (a)	Angle OCD = 120°	Angle ACD = 39° (alternate angles, parallel lines) Angle OCD = 120° (sum of angles on a straight line add to 180°)		A = 1 of 2(a) or 2(b) M = 2(a) or 2(b) with reasons E = 2(b) with reasons
(b)	Angle OBC = 51° or Angle OCB = 51°	Angle BOC = 78° (angle at centre twice angle at circumference). Angle OBC = Angle OCB (base angles isos triangle) Angle OBC = angle OCB = 51°	Angle BOC = 78° (angle at centre twice angle at circumference). Angle OBC = Angle OCB (base angles isos triangle) Angle OBC = angle OCB = 51° Angle OCA = $51 - x^\circ$ Or equivalent.	Question 2 grade = highest of 2(a) or 2(b)
THREE (a)	$a = 21^\circ$	Angle GDE = 83 (corresponding angles, parallel lines) $a = 180 - 83 - 76$ (angle sum of triangle = 180) therefore $a = 21^\circ$		A = 3(a) or 3(b) M = 3(a) or 3(b) with reasons E = 3(b) with reasons
(b)	Any 2 step angle calculation Eg: Large triangle ACE: Angle EAC = 90° and so angle ACE = $90 - x^\circ$ OR Angle ODE = x° and angle ODB = 90°	Must get to $90 - x$ one of the ways with reasoning. Eg: Large triangle ACE: Angle EAC = 90° (angle between tangent and radii) and so angle ACE = $90 - x^\circ$ (angle sum of triangle = 180°) OR Angle ODE = x° as angle ODE = angle OED (isosceles triangle) and angle ODB = 90° (angle between tangent and radii) Angle BDC = $180 - (90 + x) = 90 - x^\circ$ (sum of angles on a straight line = 180°)	Any valid proof Eg: Large triangle ACE: Angle EAC = 90° (angle between tangent and radii) and so angle ACE = $180 - (90 + x) = 90 - x^\circ$ (angle sum of triangle = 180°) Angle ODE = x° as angle ODE = angle OED (base angles of isosceles triangle are equal) and angle ODB = 90° (angle between tangent and radii) Angle BDC = $180 - (90 + x) = 90 - x^\circ$ (sum of angles on a straight line = 180°) Angle ACE = Angle BDC, therefore triangle DBC is isosceles.	Question 3 grade = highest of 3(a) or 3(b)

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
Use geometric reasoning to solve problems 2 A from 2 different questions	Use, and state, geometric reasons in solving problems. 2 M from 2 different questions	Solve an extended geometrical problem. 2 M + 1 E from 3 different questions OR 2 E

Lower case **a**, **m**, **e** may be used throughout the paper to indicate contributing evidence for overall grades for questions. The circled upper case **A**, **M** and **E** grades shown at the end of each full question are used to make the final judgement.

The following Mathematics-specific marking conventions may also have been used when marking this paper:

- Errors are circled.
- Omissions are indicated by a caret (^).
- **NS** may have been used when there was not sufficient evidence to award a grade.
- **CON** may have been used to indicate 'consistency' where an answer is obtained using a prior, but incorrect answer and **NC** if the answer is not consistent with wrong working.
- **CAO** is used when the 'correct answer only' is given and the assessment schedule indicates that more evidence was required.
- **#** may have been used when a correct answer is obtained but then further (unnecessary) working results in an incorrect final answer being offered.
- **RAWW** indicates right answer, wrong working.
- **R** for 'rounding error' and **PR** for 'premature rounding' resulting in a significant round-off error in the answer (if the question required evidence for rounding).
- **U** for incorrect or omitted units (if the question required evidence for units).
- **MEI** may have been used to indicate where a minor error has been made and ignored.